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My first intention was to assign weights and proceed to a solution of equations of condition, thus correcting the assumed position; but the resulting corrections were found to be very small, and I have judged it best to wait until I can add all the observations to be found in Catalogues which I do not possess. The experiments which I made led mainly to the conclusion that the formulæ heretofore given cannot be much improved at present, at least with any certainty.

In carrying the calculations forward for the next few years, the following values for 1885, depending on the same elements, will be found useful:—

	A.R.			Decl.		
	h	m	s	°	′	″
Value without P.M. from 1855	19	38	57·84	+88	57	19·39
Annual Precession			−63·5110			+8·3917
Secular Variation			−28·998			−8·415
Third Term			+162·2			−93·6

The effect of P.M. from 1855 up to the year of observation should be interpolated from the previous table and added to the values derived from these numbers.

In case the arrangement of the calculation given in this paper shall save anyone else the annoyances which I have undergone in the solution of similar problems, my object will have been gained; the points of originality in the process are of course few and small.

The star's place itself would seem not to require so many observations as have been made for a few years, but rather such as shall individually possess the greatest possible accuracy.

Williams College,
Williamstown, Mass., U.S.A.,
May 15, 1878.

A Reply to Mr. Proctor's Note in the March Number of the Monthly Notices.

By E. J. Stone, M.A., F.R.S., Her Majesty's Astronomer, Cape of Good Hope.

1. Mr. Proctor's remarks in the March No. on my paper in the January No. appear to call for some reply on my part.

In Mr. Proctor's paper in the Supplementary No. of the *Notices*, 1877, he says that he has proved "that by no optical contrivances can apparent brightness be increased, though quantity of light can, of course, be greatly increased." I stated in my note in the January No. that this statement requires qualification; for, if it were true, why could not the satellites of *Mars* be as easily seen with a 4-inch telescope as with the 26-inch of the Washington Observatory? Mr. Proctor's answer to this is that my question contains its own answer, viz. "that quantity of light is, of course, greatly increased when the larger telescope is used." But the satellites would not be visible with the large telescope rather than with the small one unless their apparent

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brightness was also increased. It will be seen, therefore, that Mr. Proctor's answer directly proves my statement that his general proposition requires qualification and is not applicable to such objects as the satellites of *Mars*; and anyone who will refer to my paper in the January No. will see that my object in bringing this point forward was simply to show that Mr. Proctor's statement required qualification before we could apply it to the case of distant stellar clusters, which was the subject of consideration in my paper. Although I have not mentioned anything about the theory of diffraction disks directly, anyone acquainted with the subject would see at once that it was the basis upon which my views rested, and the reason of my referring to telescopes of a small aperture and low magnifying power in relation to some "Statements of Mr. Proctor on Irresolvable Clusters."

2. My original paper on "A cause for the appearance of bright lines in the Spectra of Irresolvable Star Clusters" has been misunderstood, and therefore could not have been explained in sufficient detail; but on reference to my original paper in the *Proceedings of the Royal Society*, or the extract from it given in the January No. of the *Notices*, it will be seen that I state that "each star, if isolated, would be surrounded by its own gaseous envelope. These gaseous envelopes might, in the case of a cluster, form over the whole or a part of the cluster a *continuous mass* of gas"; and it is expressly stated that it is with reference to such clusters that the light of the gaseous envelope might ultimately predominate over that of the stellar masses. If the phrase "a continuous mass of gas" means anything, it means what I assert I intended it to mean in the January No., viz. that the clusters were physically close and not merely optically close, and I think that the qualifications with which Mr. Proctor admits that he does not doubt that I really meant in my original paper what I asserted that I meant in the January No. would have been better omitted.

1878, *May* 13.

Note on Dr. W. Erck's Observations of the Outer Satellite of Mars.

By A. Marth, Esq.

In consequence of an unnoticed innovation in the dating of two of Dr. Erck's observations of the satellite of *Mars*, the computed angles of position given on page 365, for September 16 and 26, do not refer to the times of the observations, which were really made 24 sidereal hours earlier. When making the computations, I had not the text of Dr. Erck's communication before me, but merely an extract containing the assigned times and position angles, and therefore I took September 16, $1^h\ 0^m$ G.S.T. to mean, as usually, $1^h\ 0^m$ G.S.T. on September 16, as I was not aware of Dr. Erck's deviation from the customary reckoning of dates. It appears, however, from a reference to the text, and from a further communication made

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